



PATENT APPLICATION  
Mo6968  
MD00-130-PU

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

APPLICATION OF )  
 )  
JEFFREY ROBBINS ET AL ) GROUP NO.: 1733  
 )  
SERIAL NUMBER: 10/068,123 ) EXAMINER: J.L. Goff II  
 )  
FILED: February 5, 2002 )  
 )  
TITLE: PATTERNED POLYURETHANE )  
FOAM AND A PROCESS FOR THE )  
PRODUCTION OF TUFTED GOODS )  
WITH PATTERNED FOAM BACKING )


**LETTER**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 2231-1450

Sir:

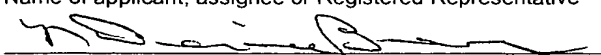
Enclosed is an Appeal Brief in the matter of the subject Appeal. Please charge the fee for filing the Brief, \$340.00, to our Deposit Account Number 13-3848. Triplicate copies of this paper are enclosed.

Respectfully submitted

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Date  
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Name of applicant, assignee or Registered Representative  
  
Signature  
November 23, 2004  
Date



PATENT APPLICATION  
Mo-6968  
MD-00-130-PU

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*IFW*

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

APPLICATION OF )  
JEFFREY ROBBINS ET AL ) GROUP NO.: 1733  
SERIAL NUMBER: 10/068,123 ) EXAMINER: J.L. GOFF II  
FILED: FEBRUARY 5, 2002 )  
TITLE: PATTERNED POLYURETHANE )  
FOAM AND A PROCESS FOR THE )  
PRODUCTION OF TUFTED GOODS )  
WITH PATTERNED FOAM BACKING)

**APPEAL BRIEF**

This Brief is an appeal from the Final Office Action of the Examiner dated September 8, 2004, in which the rejection of Claims 1-10 and 13-15 was maintained. A Notice of Appeal was filed on September 27, 2004.

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Date

N. Denise Brown

Name of applicant, assignee or Registered Representative

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Signature

November 23, 2004

Date

### **I. REAL PARTY IN INTEREST**

This application was assigned to Bayer MaterialScience LLC by each of the named inventors.

### **II. RELATED APPEALS AND INTERFERENCES**

There are no prior or pending appeals, interferences or judicial proceedings which Appellants are aware that may be related to, would directly affect, would be affected by or have a bearing on the Board's decision in this appeal.

### **III. STATUS OF CLAIMS**

The above-referenced application was filed with Claims 1-31.

Claims 11, 12 and 16-31 were withdrawn from consideration in an amendment dated April 1, 2004.

Claims 1-10 and 13-15 are pending but stand rejected. Claims 1-10 and 13-15 are the subject claims of this appeal.

### **IV. STATUS OF AMENDMENTS**

Appellants filed no amendments subsequent to final rejection.

It is noted by Appellants that the Advisory Action dated September 8, 2004 states that for the purposes of Appeal, the proposed amendment will be entered. However, on August 26, 2004 Appellants filed a response, without an amendment, to the Final Office Action dated June 28, 2004. Accordingly, it is submitted that the Advisory Action is incorrect as there is no amendment to be entered upon Appellants filing of their Notice of Appeal.

## **V. SUMMARY OF CLAIMED SUBJECT MATTER**

The invention of Claim 1 is directed to a process for the preparation of a patterned polyurethane backed tufted good. (See Page 3, Lines 9-11.) (In order to assist the Honorable Board in its evaluation of the invention, reference will be made to the specification in which "P" will designate a page number and "L" will designate the line number(s)). This process comprises (1) applying a puddle of a reactive polyurethane mixture to the back side of a greige good or a precoated greige good (see P3, L11-15; P6, L), (2) passing the greige good coated with the reactive polyurethane mixture under a doctoring device, wherein the edge of the doctoring device is patterned or the doctoring device comprises a removable attachment that is patterned, thus forming a pattern in the polyurethane mixture as it passes under the edge of the doctoring device or the removable attachment (see P3, L15-16 and P3, L18-27), and (3) curing the polyurethane backed greige good which exhibits the desired pattern in the polyurethane backing (see P3, L16-17). In accordance with the present invention, the reactive polyurethane mixture comprises: (a) at least one polyisocyanate component, (b) at least one isocyanate-reactive component, (c) at least one non-Newtonian thickeners, and (d) at least one filler (see P4, L4-10). (Also see Claim 1 on P15, L1-21.)

This process is illustrated in **Figure 1**. **Figure 1** shows the greige good **3**, with carpet exterior **5** and the reverse side of the greige good **7**, being redirected by rollers **9** to place the reverse side **7** of the greige good **3** such that it faces up. To the reverse side **7** of the greige good **3**, a puddle **16** of reactive polyurethane mixture is applied through supply line **18**. The coated greige good **3** then passes under the doctor blade **20**, which in cooperation with the platen **22**, limits the amount of reactive polyurethane mixture from puddle **16** that is applied to the reverse side **7** of the greige good **3**. The doctor blade **20** is optionally patterned or has a removable attachment that is patterned. In addition to limiting the amount of reactive polyurethane mixture applied to the reverse side **7** of the greige good **3**, the doctor blade **20** simultaneously, in conjunction with platen **22**, forms a pattern (not shown) in the polyurethane mixture. After passing under the doctor blade **20**, the

polyurethane coated greige good enters a curing oven **39** downstream in which the polyurethane is cured. This is the broadest aspect of the invention as set forth of Claim 1, and is also described in the specification at P9, L26-32 and at P10, L10 through P11, L 4. More specifically, this corresponds to (1) applying a puddle of a reactive polyurethane mixture to the back side of a greige good, (2) passing the greige good coated with the reactive polyurethane mixture under a doctoring device wherein the edge of the doctoring device is patterned or comprises a removable attachment that is patterned, and (3) curing the polyurethane backed greige good.

Although **Figure 1** as shown illustrates two puddles **8** and **16** of polyurethane mixture being applied through two respective supply lines **10** and **18**, and passing two respective doctor blades **12** and **20** with corresponding platens **14** and **22**, it is expressly stated in Appellants specification that the first puddle **8**, supply line **10**, doctor blade **12** and platen **14** are optional. See P10, L7-9. These are typically used when applying a precoat, for example. In Claim 1 of the present application, the first puddle **8**, supply line **10**, doctor blade **12** and platen **14** are only required for the embodiment in which the puddle of reactive polyurethane mixture is applied to the back side of a precoated greige good (vs. the back side of greige good as described above).

**Figure 1** as shown also illustrates a woven secondary backing **23** from supply roll **25**, passing rollers **36** and **38** and being contacted with the coated greige good **3** after passing doctor blade **20** and platen **22**, and before entering the curing oven **39**. The application of this secondary backing is also optional as described at P10, L32 through P11, L4, and is clearly not required by Claim 1. This embodiment is encompassed by Claims 14 and/or 15.

The remaining embodiments which are described in the present specification at P 11, L5 through P12, L3 and illustrated by Figure 1, correspond to the invention of Claims 16-29. Claims 16-29 have been withdrawn from consideration due to a restriction requirement.

## **VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL**

Claims 1 and 2 stand rejected under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent Number 4,423,103 (Bogdany).

Claims 1-10 and 13-15 stand rejected under 35 U.S.C. § 103(a) as being obvious over WO 00/37737 (Holeschovsky et al, believed to correspond to U.S. Patent Number 6,264,775) in view of U.S. Patent Number 4,354,810 (Stidham), GB 2,160,790A (Satiar), U.S. Patent Number 5,045,375 (Davis et al), or U.S. Patent Number 4,423,103 (Bogdany).

Claims 1-10 and 13-15 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent Number 4,354,810 (Stidham) in view of WO 00/37737 (Holeschovsky et al, believed to correspond to U.S. Patent Number 6,264,775).

Claims 3-10 and 13-15 stand rejected under 35 U.S.C. § 103(a) as being obvious over U.S. Patent Number 4,423,103 (Bogdany), and further in view of WO 00/37737 (Holeschovsky et al, believed to correspond to U.S. Patent Number 6,264,775).

## **VII. ARGUMENTS**

**CLAIMS 1 AND 2 ARE NOT ANTICIPATED BY U.S. PATENT 4,423,103 (THE BOGDANY REFERENCE).**

Appellants respectfully submit the Bogdany reference does not anticipate the presently claimed invention. There are at least two key differences between the present invention and that of the Bogdany reference. This reference requires a doctor bar and a rake with tines in the process of forming the patterned surface in the foam underlay, and it only discloses conventional fillers. By comparison, the present invention only requires a doctor bar, and it requires non-Newtonian thickeners as well as convention fillers. The doctor bar in the present invention is

either patterned on the edge or has a removable attachment that is patterned on the edge.

The Bogdany reference describes a carpet having a resilient foam underlay adhered to the back, in which the foam underlay comprises a plurality of parallel, serpentine rows of a cured, cellular, organic polymeric composition. A method for producing this carpet is also disclosed. As disclosed by the '103 patent, a pattern is formed on the polymeric froth coating by reciprocating a rake through the froth on the substrate as the froth is carried under the rake by the moving substrate. More specifically, the method comprises pouring and spreading (by a doctor blade or doctor bar) a liquid frothed organic polymeric composition on the advancing surface of a fabric to form a froth layer of uniform gauge on the fabric. A pattern is then created in the froth by reciprocating at least one rake that has a plurality of tines across and through the froth as it advances underneath the rake. The patterned froth is then cured.

Appellants respectfully submit that both a doctor bar and a rake are required by the Bogdany reference. The doctor bar is essential in this reference to spread the froth evenly across the surface of the substrate and to properly gauge the thickness of the froth on the substrate, before it passes underneath the rake which forms the pattern. The rake is clearly positioned behind the doctor bar by about 3 to 20 feet depending on the specific polymeric system used. It is expressly disclosed that the doctor bar gauges the froth to the required thickness. See the specification of U.S. 4,423,103 at column 1, line 60 through column 2, line 6; column 3, lines 8-12; and column 5, lines 28-35. In addition, Figure 1 of the Bogdany reference and the corresponding description thereof at column 1, line 60 through column 2, line 11 provides a description of the complete process or method. It is apparent from this figure and the corresponding portion of the specification, that the froth or foam is placed on the surface of the substrate, the doctor bar spreads the froth evenly across the surface, and after this, the rake forms the pattern in the froth layer.

By comparison, the presently claimed invention spreads the froth, gauges the thickness of the froth and forms the pattern in the froth in one step. Appellants

invention only requires one doctor blade (or doctor bar). This doctor blade either has a patterned edge or a removable attachment that is patterned. This single doctor blade of the present invention spreads the froth and controls the thickness of it, and simultaneously forms the desired pattern in the froth. Thus, the presently claimed invention is simpler, faster and more efficient than that of the Bogdany reference. It is respectfully submitted that the present invention is not anticipated by this reference.

With regard to the optional embodiment of the present invention that is described in the present specification on P9, L26 through P11, L4 and illustrated by the Figure, in which there are two puddles applied and two doctor blades, it is respectfully submitted that this embodiment is also not anticipated by the Bogdany reference. This embodiment of the present invention is directed to first applying a precoat to the back surface of the greige good, passing this under a doctor bar, then applying the reactive polyurethane mixture which contains non-Newtonian thickeners in a second puddle and passing this under a patterned doctor bar.

Appellants respectfully submit that the Bogdany reference also does not anticipate this embodiment of the present invention. It is readily apparent from the specification of the Bogdany reference that the doctor bar and the rake are separate, and they are both used on the frothed polymeric composition. This reference simply does not describe applying a puddle of a precoat to the back surface of a greige good, passing the puddle of precoat under a doctor bar, applying a puddle of reactive polyurethane mixture containing at least one non-Newtonian thickener to the back side of the precoat, and passing this under a doctor bar which is patterned or has a removable attachment that is patterned.

Rather, the method or process of the Bogdany reference clearly discloses that the liquid, frothed organic polymeric composition is poured on the advancing surface of the substrate, it is spread out by a doctor bar to form a layer of substantially uniform thickness or gauge, and downstream from this, a pattern is created on the froth by reciprocating at least one rake with a plurality of tines across and through the froth, thus forming a pattern in the froth. In other words, there is



one puddle applied to the substrate in the process of this reference and this puddle is passed under a doctor bar to gauge the thickness and then under a rake to form the pattern. This reference simply does not disclose any information about applying more than one puddle, regardless of the composition of that puddle (i.e. precoat, liquid frothed polymeric composition, etc.). Accordingly, the Bogdany reference does not anticipate the presently claimed invention.

In addition, another difference between the present invention and that of the Bogdany reference relates to the presently required non-Newtonian thickeners. It is readily apparent from the present claims and Appellants' specification that both (d) conventional fillers and (c) non-Newtonian thickeners are essential to the present invention. (See P4, L4-10 and L21-24.) The Bogdany reference only discloses conventional fillers (see column 5, lines 8-15). One of ordinary skill in the art would readily know and recognize that these fillers are conventional fillers and correspond to the fillers (d) of the present invention, instead of the presently required non-Newtonian thickeners, i.e. component (c) of the invention.

The present specification describes both (d) conventional fillers at P7, L3-13, and (c) non-Newtonian thickeners at P7, L14 through P9, L20. Conventional fillers that are disclosed therein include ground limestone, dolomite, alumina trihydrate, calcium carbonate, etc. and have a relatively large particle size (i.e. 15 to 100  $\mu\text{m}$ ) and a low specific BET surface area (generally  $< 5 \text{ m}^2/\text{g}$ ). These are typically used in amounts of from 50 to 300 parts by weight, based on 100 parts by weight of isocyanate-reactive components. By comparison, the non-Newtonian thickeners have larger BET surface areas (i.e.  $> 10 \text{ m}^2/\text{g}$ ) and exhibit a substantial inverse relationship between sheer and viscosity. These include, for example, precipitated calcium carbonate, finely divided clays, precipitated or fumed silicas, etc.

Although calcium carbonate is disclosed by the Bogdany reference as a suitable filler, this is clearly not the precipitated calcium carbonate which Appellants describe as a suitable non-Newtonian thickener at P7, L20. Rather, this is a conventional filler. This position is supported by the working examples of the present application. See Table 1 and description of components at P13, L1-14. It is

evident from Table 1 that all of the examples, including the comparative examples, contain between 100 and 200 parts by wt. (per 100 parts by wt. of isocyanate-reactive components) of calcium carbonate. This calcium carbonate was the conventional filler, i.e. component (d) of the present invention, and is the same as that which is described by the Bogdany reference. One of ordinary skill in the art would clearly know and understand this upon reading the working examples of the present application.

In addition, these working examples use fumed silica as (c) the non-Newtonian thickener. Although the Bogdany reference describes fillers as including materials such as silicas, the skilled artisan would understand that these are conventional silicas, not fumed or precipitated silicas. The quantity of fumed silica (i.e. Aerosil 200), a non-Newtonian thickener, used in the examples that are representative of the present invention is relatively small in comparison to the quantity of conventional filler. More specifically, these examples use from 2 to 4.5 parts by wt. of fumed silica per 100 parts by wt. of isocyanate-reactive components.

It is respectfully submitted that in light of the fact that the Bogdany reference does not disclose the presently required non-Newtonian thickeners, this reference can not anticipate the presently claimed invention. Since this reference only discloses conventional fillers and is silent with respect to non-Newtonian thickeners. It is submitted that the presently claimed invention is not properly anticipated by the Bogdany reference.

In view of the above remarks, Appellants respectfully submit that the presently claimed invention is not anticipated by the Bogdany reference. The presently claimed invention requires a component (i.e. non-Newtonian thickeners) that is not disclosed by this reference, and the actual process is simpler and more efficient than the method described by the Bogdany reference. Therefore, it is respectfully submitted that this rejection is improper and request that it be withdrawn.

CLAIMS 1-10 AND 13-15 ARE NOT RENDERED OBVIOUS BY WO 00/37737 (THE HOLESCHOVSKY ET AL REFERENCE, WHICH IS BELIEVED TO CORRESPOND TO U.S. PATENT 6,264,775) IN VIEW OF U.S. PATENT 4,354,810 (THE STIDHAM REFERENCE), GB PATENT 2,160,790A (THE SATIAR REFERENCE), U.S. PATENT 5,045,375 (THE DAVIS ET AL REFERENCE) OR U.S. PATENT 4,423,103 (THE BOGDANY REFERENCE).

Appellants respectfully submit that this combination of references does not render the presently claimed invention obvious.

The Holeschovsky et al reference discloses a polyurethane adhesive composition which enables the preparation of carpet backs via a face-up coating process. This adhesive comprises a polyisocyanate component, an isocyanate-reactive component, and either a non-Newtonian thickener or a viscosity index improving additive. This polyurethane composition is quite similar to the presently required polyurethane composition. Appellants' invention requires a polyurethane composition comprising (a) at least one polyisocyanate component, (b) at least one isocyanate-reactive component, (c) at least one non-Newtonian thickener, and (d) at least one filler.

It is well known that conventional polyurethane compositions can not be applied to a greige good in the traditional "face-up" manner that is used to apply latex compositions to the back of a greige good. This is the problem that the Holeschovsky et al reference addresses. This is due to the fact that a conventional polyurethane composition decreases in viscosity as the coated greige good passes through the curing oven. This results in the polyurethane compositions dripping and running off the greige good if it is a "face-up" process as used for latex. For this reason, polyurethane backed carpets are typically formed in a face-down process. A face-down process is one in which the reverse side of the greige good faces up, the polyurethane composition is applied to the reverse side of the greige good, and

the coated greige good passes through the curing oven in this face-down manner. See page 3, lines 3-30 of the Holeschovsky et al reference.

The Holeschovsky et al reference does not disclose any information concerning the formation of a pattern in a polyurethane backed greige good. It is well known by one of ordinary skill in the art, however, that problems arise when forming a pattern in a polyurethane composition used as a backing on a greige good. This is discussed in the present specification on page 2, lines 21-32. Such problems are not typically encountered when using a latex to back a greige good. Embossing rollers work well with latex compositions. Polyurethane compositions tend to stick to embossing rollers unless the roller contacts the surface precisely at the point where sufficient urethane skin is on the surface of the polyurethane composition to minimize sticking but the core of the polyurethane composition is still liquid to permit formation of a pattern. Accordingly, a reference that only broadly discloses or discusses forming patterns in carpet backings does not provide one of ordinary skill in the art any guidance or insight into how to handle the unique problems presented by backing comprising polyurethane compositions.

Of the secondary references cited by the Examiner in the obviousness rejection, polyurethanes are disclosed as suitable compositions by the Stidham reference (see column 6, lines 33-36), the Davis et al reference (see column 4, lines 43-64, and column 5, lines 4-29), and the Bogdany reference (see column 4, lines 2-38). The Satiar reference only discloses foamed rubber which comprises latex (natural or synthetic) as a suitable backing composition (see page 1, lines 4-14). Accordingly, the Satiar reference is not particularly relevant to the presently claimed invention.

The skilled artisan has no insight into the present invention upon reading the Holeschovsky et al reference in combination with the Satiar reference. Neither of these references disclose any information which would lead one of ordinary skill in the art to reasonably believe and/or expect that a pattern could be formed in the polyurethane compositions of the Holeschovsky et al reference by the process described in the Satiar reference. Appellants respectfully submit that neither of

these references disclose any information which would lead the skilled artisan to conclude that the polyurethane compositions of the Holeschovsky et al reference, when dried and processed in the usual manner will not collapse under the action of gravity as described on page 1, lines 60-65 of the Satiar reference. It is expressly disclosed therein that the foamed latex does not collapse because it exhibits slightly thixotropic properties and partly because the air content renders the foam light. In light of the known differences between latex foams and polyurethane foams, Appellants submit that it is not "obvious" to one of ordinary skill in the art that polyurethane compositions similar to those of the Holeschovsky et al reference would be suitable for forming patterns and capable of holding or maintaining those patterns through the curing phase.

The remaining secondary references disclose polyurethane compositions. In particular, the Stidham reference discloses suitable foamed fluids therein may be latex or urethane at column 3, lines 10-13; column 6, lines 33-36 and Example 1 at column 6, lines 41-54. The Davis et al reference discloses polyurethanes and polyureas at column 1, lines 37-40 and 44-46; column 2, lines 10-11, 21-23, 29-40; column 3, lines 1-2, column 5, lines 4-22; and Examples I-V at column 5, line 35 through column 6, line 24. Latex and polyurethane foams are both described by the Bogdany reference. See column 1, lines 63-66; column 3, lines 40-43; and column 3, line 65 through column 5, line 7. The Bogdany reference does not contain any working examples.

Appellants respectfully submit that an "obvious to try" standard of patentability is being applied. Any of these secondary references in combination with the Holeschovsky et al reference does not fairly suggest the presently claimed invention to one of ordinary skill in the art.

As previously stated, a common problem in creating patterns in polyurethane systems is the fact that the polyurethane tends to stick to the embossing roller. This is discussed in depth on page 2, lines 21-32 of the present application. The Stidham reference provides no information or guidance to one of ordinary skill in the art on how to prevent this. This reference describes an apparatus for continuously

distributing a viscous foamed fluid composition which is applied to a movable substrate. This apparatus provides a means for imparting a surface pattern to the viscous foamed fluid composition on the substrate. Preferred substrates are tufted and/or woven carpets (see column 6, lines 29-31 of the Stidham reference).

Although the Stidham reference discloses that the apparatus therein is suitable for both latex and polyurethane foam compositions, the only working example uses a latex composition. Thus, it is unclear at best how well the method for forming patterns described by this reference would work with a polyurethane composition. Appellants respectfully submit that the skilled artisan has no insight into the fact that the polyurethane compositions of the Holeschovsky et al reference which contain non-Newtonian thickeners overcome this problem associated with conventional polyurethane compositions and the problem with retaining the pattern in the foam throughout the curing region.

Only after reading Appellants' specification does this become obvious to one of ordinary skill in the art. Such a perspective does **not**, however, provide a proper basis for a rejection under 35 U.S.C. §103.

As previously discussed with regard to the anticipation rejection, the Bogdany reference discloses that the rake with tines can form a pattern in the froth or foamed layer of material and avoid the need for an embossing roller (see column 1, lines 32-45). It also discloses that the rake is positioned behind the doctor blade, after the froth has been doctored to the required thickness, from about 3 to about 20 feet, depending on the type of polymer system used and the pot life of this system (column 3, lines 8-12). Appellants respectfully submit that it is evident from this that the type of froth or foam layer determines how long after doctoring the froth or foam layer one must wait to form the pattern in the froth or foam layer.

One of ordinary skill in the art has no insight into the fact that when polyurethane compositions which contain non-Newtonian thickeners as similar to those described in the Holeschovsky et al reference are used in a process to form a pattern in, it is no longer necessary to form the pattern at some point after the froth

or foam has been doctored to the pre-determined thickness. Rather, the skilled artisan would still expect that one must wait either until after the greige good with the gauged coating has traveled the specified distance (i.e. 3 to 20 feet) or for a specific point in the pot life of the composition before one can successfully form a pattern as described above. It is simply not obvious to one of ordinary skill in the art that the polyurethane compositions of the Holeschovsky et al reference allow a pattern to be formed immediately at the point of gauging the thickness, instead of at a later point in time! This is simply not suggested to the skilled artisan by this combination of references.

Polyurethane compositions of the Davis et al reference differ from those of the Holeschovsky et al reference. More specifically, these polyurethane compositions described as secondary coatings (or non-skid coatings) comprise a di- or poly-functional isocyanate, a di- or poly-functional polyol and a di- or tri-functional aliphatic or aromatic amine. Thus, this forms a blend of a polyurea and a polyurethane (see column 5, lines 9-14 of the Davis et al reference).

It is the polyurea portion of this composition that enables the secondary coating to remain in place and to retain the desired shape (see column 5, lines 4-20). The Davis et al reference also discloses that these secondary coatings may be patterned (column 3, lines 7-17), and these patterns may be formed by applying the nonskid coating in the form of ribs or other discrete shapes on the back of the carpeting, or by using a notched doctor blade such that all of the nonskid coating is removed except that which passes through the notches in the doctor blade. The amine reacts quickly to form a thixotropic gel structure that holds the coating in the configuration in which it was applied (column 5, lines 15-29; column 7, lines 10-16).

It is apparent from the Davis et al reference that some polyurethane compositions, such as those comprising polyurea and polyurethane and described therein, are suitable for forming patterns, the reference combined with the Holeschovsky et al reference simply does not provide a proper basis for one of ordinary skill in the art to reasonably conclude and/or expect that the polyurethane compositions of the Holeschovsky et al reference which contain non-Newtonian

thickeners, are also capable of maintaining a pattern once it is formed. Upon reading the Davis et al reference, the skilled artisan would expect that the foam composition is critical and must form a thixotropic gel structure to hold the desired pattern. Appellants respectfully submit that there is simply no basis for one of ordinary skill in the art to believe polyurethane compositions containing non-Newtonian thickeners as described by the Holeschovsky et al reference would form such a thixotropic gel structure. Accordingly, the skilled artisan could not reasonably expect that substituting the polyurethane composition from the Holeschovsky et al reference for the foam of the Davis et al reference and following the process described by this secondary reference would result in a patterned backing on a greige good.

Finally, Appellants respectfully submit that even if it is considered *prima facie* obvious to substitute the polyurethane compositions of the Holeschovsky et al reference for the foam compositions in the processes of any of the secondary references (Satiar, Stidham, Bogdany, and/or Davis et al), the skilled artisan could not reasonably predict that these polyurethanes containing non-Newtonian thickeners would retain the desired form or shape of a pattern as well as or any better than the polyurethane compositions disclosed by the secondary references. The examples of the present application clearly support the fact that a polyurethane composition containing a non-Newtonian thickener retains the desired shape even after curing. See Examples 1, 2 and 3 of the present application. By comparison, those polyurethane compositions which contain conventional fillers (such as are disclosed by the Bogdany reference), do **not** retain the desired shape. In these examples, the "ribs" start to flow back into the grooves immediately after being formed. In fact, the ribs completely disappeared after curing of the coating. See Comparative Examples C1, C2 and C3 vs. Examples 1, 2 and 3, and discussion in the present application on P12, L15 through P13, L14.

Appellants respectfully submit that the Holeschovsky et al reference taken in combination with any of these secondary references simply does not disclose sufficient information such that to one of ordinary skill in the art would reasonably conclude or believe that that the polyurethane compositions which contain non-



Newtonian thickeners of the Holeschovsky et al reference would significantly improve the ability to form a pattern in the coating on the back of a greige good and maintain the desired shape of this pattern throughout the curing stage. Accordingly, the presently claimed invention is not properly rejected under 35 U.S.C. § 103(a) as being obvious in view of the Holeschovsky et al reference (WO 00/37737) in combination with the Stidham reference (U.S. Patent 4,354,810), the Satiar reference (GB 2,160,790A), the Davis et al reference (U.S. Patent 5,045,375), or the Bogdany reference (U.S. Patent Number 4,423,103).

CLAIMS 1-10 AND 13-15 ARE NOT RENDERED OBVIOUS BY U.S. PATENT 4,354,810 (THE STIDHAM REFERENCE) IN VIEW OF WO 00/37737 (THE HOLESCHOVSKY ET AL REFERENCE, WHICH IS BELIEVED TO CORRESPOND TO U.S. PATENT 6,264,775).

Appellants respectfully submit that the present invention is not obvious in view of the Stidham reference in view of the Holeschovsky et al reference.

As previously discussed, the Stidham reference broadly discloses an apparatus which a distribution means suitable for forming a pattern in the viscous foamed fluid composition used to coat a substrate such as a greige good. Both latex foams and polyurethane foams are broadly disclosed as being suitable for the apparatus described by the Stidham reference (see column 3, lines 10-13; column 6, lines 33-36 and Example 1 at column 6, lines 41-54). Example 1, the only working example in this reference, uses a latex foam formulation.

The present specification describes the known difficulties associated with forming a pattern in polyurethane compositions. See page 2, lines 21-32 of Appellants application. It is well known by the skilled artisan that polyurethane compositions tend to stick to embossing type rollers. Thus, it is necessary to use such an embossing roller at the point of the polyurethane having a sufficient urethane skin to minimize the sticking. The core of the polyurethane must still be liquid, however, to permit formation of the pattern. Thus, one can use an apparatus such as is described by the Stidham reference with a polyurethane composition.

It is not, however, readily apparent to one of ordinary skill in the art that by proper selection of the composition of the polyurethane that the problems associated with the sticking of the composition to the embossing roller is avoided altogether. The skilled artisan has no insight into the fact that substituting the polyurethane compositions (or similar compositions) of the Holeschovsky et al reference which contains non-Newtonian thickeners for the polyurethane compositions of the Stidham reference eliminates the need to determine the exact or best point at which a pattern can be formed in the polyurethane. In addition, it is not readily apparent to one of ordinary skill in the art that the polyurethane compositions described by the Holeschovsky et al reference have an improved ability to retain the desired shape of a pattern formed therein, even after being subjected to curing.

As discussed above, the working examples of the present application illustrate the improved effect of the non-Newtonian thickeners vs. conventional fillers on the ability of the foam to retain a pattern. The skilled artisan has no insight into this upon reading this combination of references. Accordingly, Appellants respectfully submit that the Stidham reference combined with the Holeschovsky et al reference does not render the presently claimed invention obvious to one of ordinary skill in the art. Thus, the presently claimed invention is not properly rejected under 35 U.S.C. § 103(a) over this combination of references.

CLAIMS 3-10 AND 13-15 ARE NOT RENDERED OBVIOUS BY U.S. PATENT 4,423,103 (THE BOGDANY REFERENCE), ALONE OR IN VIEW OF WO 00/37737 (THE HOLESCHOVSKY ET AL REFERENCE, WHICH IS BELIEVED TO CORRESPOND TO U.S. PATENT 6,264,775).

Appellants respectfully submit that Claims 3-10 and 13-15 are not obvious to one of ordinary skill in the art upon reading the Bogdany reference alone, or in combination with the Holeschovsky et al reference.

Claim 3 of the present invention is specific to an inorganic non-Newtonian thickener having a specific surface area of about 10 m<sup>2</sup>/g or greater. As Appellants pointed out previously with regard to the rejection under 35 U.S.C. § 102(b) and the first rejection under 35 U.S.C. § 103(a), the Bogdany reference does not disclose non-Newtonian thickeners, regardless of whether they are organic or inorganic, etc. This reference describes conventional fillers including soft clays, hard clays, barites, silicas, silicates, calcium carbonate, alumina trihydrate, etc. (see column 5 , lines 8-10).

Fillers such as those of the Bogdany reference correspond to and overlap with the conventional mineral fillers corresponding to component (d) of the present invention and as described in the present specification at page 7, lines 4-13. Calcium carbonate is readily recognized by one of ordinary skill in the art as a conventional mineral filler, not as a non-Newtonian thickener. Precipitated calcium carbonate is, by comparison, a non-Newtonian thickener. Appellants disclose precipitated calcium carbonate as one suitable non-Newtonian thickener at page 7, line 20 along with other suitable non-Newtonian thickeners (see page 7, line 14 through page 9, line 20).

It is respectfully submitted that the working examples of the present application support this position. Calcium carbonate is used in all 6 examples (both those representative of the invention and the comparison examples) of the present application. See Table 1 on page 13 at lines 1-4. All six examples contain from 100 to 200 parts of calcium carbonate filler. Only Examples 1, 2 and 3 contain a non-Newtonian thickener, i.e. Aerosil® 200 (fumed silica). As discussed on page 12, lines 15-32, only in Examples 1, 2 and 3 was the desired pattern in the polyurethane composition maintained throughout the curing stage of the process. In the Comparative Examples C1, C2 and C3 (which contained calcium carbonate as disclosed by Bogdany), the polyurethane composition started to flow back to the original shape immediately after being formed, and the pattern completely disappeared after curing.

Appellants respectfully submit that it is readily apparent from these examples that the Bogdany reference simply does not suggest the presently claimed invention to one of ordinary skill in the art. The fillers disclosed by this reference are clearly conventional mineral fillers, and there is no mention of non-Newtonian thickeners. Accordingly, the skilled artisan has no insight into the present invention upon reading the Bogdany reference.

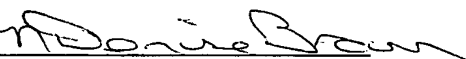
In addition, combining the Bogdany reference with the Holeschovsky et al reference also does not render the present invention obvious to the skilled artisan. Although polyurethane compositions similar to those required by the present invention are described by the Holeschovsky et al reference, one of ordinary skill in the art can not reasonably predict or believe that substituting these polyurethanes for those of the Bogdany reference will result in a significantly improved ability to maintain the desired shape or pattern in the foamed composition on a greige good. There is no information disclosed in the Holeschovsky et al reference which leads the skilled artisan to conclude or expect that the compositions therein which contain a non-Newtonian thickener would improve the ability of the polyurethane to retain the shape or pattern significantly in comparison to the conventional mineral fillers. Working examples of the present application clearly show this improvement. This is simply not suggested by this combination of references.

Finally, Appellants respectfully submit that this combination does not result in the presently claimed invention. The Bogdany reference requires a doctor blade (or bar) to gauge the thickness of the foam composition applied to the substrate, and, after the specified distance, a rake is applied to form the desired pattern. The present invention uses a patterned doctor blade to gauge the thickness of, and to simultaneously form the pattern in the polyurethane composition. There is no suggestion in the Bogdany reference that the thickness can be gauged and the pattern formed at the same time. Accordingly, regardless of the composition of the polyurethane substituted for that composition in the Bogdany reference, the method or process is not the same.

Appellants respectfully submit that the presently claimed invention is not fairly suggested to one of ordinary skill in the art by this combination of references. Thus, it is submitted that this rejection is improper and requested that it be withdrawn.

In view of the preceding arguments, Appellants submit that each of the Examiner's rejections is in error and respectfully request that the rejections be reversed. The allowance of Claims 1-10 and 13-15 is respectfully requested.

Respectfully submitted,

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### **VIII. CLAIMS APPENDIX:**

Claim 1. A process for the preparation of a patterned polyurethane backed tufted good comprising:

- (1) applying a puddle of a reactive polyurethane mixture to the back side of a greige good or a precoated greige good, wherein the reactive polyurethane mixture comprises:
    - (a) at least one polyisocyanate component,
    - (b) at least one isocyanate-reactive component,
    - (c) at least one non-Newtonian thickeners,and
    - (d) at least one filler;
  - (2) passing the greige good coated with the reactive polyurethane mixture under a doctoring device, wherein the edge of the doctoring device is patterned or the doctoring device comprises a removable attachment that is patterned, thereby forming a pattern in the polyurethane mixture as it passes under the edge of the doctoring device or the removable attachment;
- and
- (3) curing the polyurethane backed greige good which exhibits the desired pattern in the polyurethane backing.

Claim 2. The process of Claim 1, wherein the doctoring device comprises a doctor blade, a doctor bar, or a doctor roller.

Claim 3. The process of Claim 1, wherein said non-Newtonian thickener is an inorganic thickener having a specific surface area about 10 m<sup>2</sup>/g or greater.

Claim 4. The process of Claim 3, wherein said inorganic thickener is present in an amount of from about 0.25 to 20 parts per 100 parts of isocyanate-reactive ingredients in the reactive polyurethane mixture.

Claim 5. The process of Claim 3, wherein said inorganic non-Newtonian thickener is selected from the group consisting of precipitated calcium carbonate, clay minerals, fumed silica, and mixtures thereof.

Claim 6. The process of Claim 3, wherein said inorganic non-Newtonian thickener comprises fumed silica and is present in an amount of at least:

$$LL = 3 - 0.01 \times FL$$

wherein:

LL: represents lower limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

and

FL: represents filler level in parts per 100 parts of isocyanate-reactive components;

and wherein the amount of non-Newtonian thickener is no more than:

$$UL = 8 - 0.02 \times FL$$

wherein:

UL: represents upper limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

and

FL: represents filler level in parts per 100 parts of isocyanate-reactive components.

Claim 7. The process of Claim 3, wherein said inorganic non-Newtonian thickener comprises precipitated calcium carbonate and is present in an amount of at least:

$$LL = 18 - 0.06 \times FL$$

wherein:

LL: represents the lower limit for non-Newtonian thickener in parts per 100 parts of isocyanate-reactive components;

and

FL: represents filler level in parts per 100 parts  
of isocyanate-reactive components;  
and wherein the amount of non-Newtonian thickener is no more than:

$$UL = 48 - 0.012 \times FL$$

wherein:

UL: represents the upper limit for non-  
Newtonian thickener in parts per 100 parts  
of isocyanate-reactive components;

and

FL: represents filler level in parts per 100 parts  
of isocyanate-reactive components.

Claim 8. The process of Claim 3, wherein said inorganic non-Newtonian thickener has a mean particle size less than 1  $\mu\text{m}$ .

Claim 9. The process of Claim 3, wherein said inorganic non-Newtonian thickener has a mean particle size less than 0.3  $\mu\text{m}$ .

Claim 10. The process of Claim 3, wherein said thickener forms aggregates and/or agglomerates.

Claim 13. The process of Claim 1, wherein the viscosity of said reactive polyurethane formulation at a first, high rate of shear is within 20% of the viscosity of a reactive polyurethane of the same formulation but devoid of non-Newtonian thickener, and is at least three times the viscosity of the non-Newtonian thickener-devoid composition at a second, lower rate of shear.

Claim 14. The process of Claim 1, additionally comprising laminating a woven secondary backing to the polyurethane coating of the desired pattern after (2) passing under the doctoring device.



Claim 15. The process of Claim 1, wherein the precoated greige good is selected from the group consisting of a cured latex precoat, a cured urethane precoat, a partially cured urethane precoat and an uncured urethane precoat.

**IX. EVIDENCE APPENDIX:**

Appellants have not submitted any evidence.

**X. RELATED PROCEEDINGS APPENDIX:**

There are no related proceedings that Appellants are aware of and identified under RELATED APPEALS AND INTERFERENCES. Thus, no copies of decisions are attached.